

REMARKS

Claims 10 and 22 have been cancelled, without prejudice or disclaimer. Claims 1 and 13 have been rewritten to incorporate the subject matter of claims 10 and 22 therein, in order to more particularly point out and distinctly claim the Applicants' invention. Thus, claims 1-9, 11-21 and 23-26 are pending in this application.

The claims have been amended to remove the rejection based on 35 U.S.C. § 112 and also to clarify the present claimed invention. Also, claim 1 has been amended to positively recite method steps.

Claims 1, 3, 10, 12-19, 22 and 24 are rejected under 35 U.S.C. § 102(b) as anticipated by Hitachi (JP 62-9822); claims 20-21 are rejected under 35 U.S.C. § 103(a) as obvious based on a combination of Hitachi in view of Shingijyutsu (JP 8-300227); claim 2 is rejected under 35 U.S.C. § 103(a) as obvious over (JP'822); claims 4, 5, 7 (and 16-17) are rejected under 35 U.S.C. § 103(a) as obvious based on a combination of Hitachi as applied to claims 1-3, 10, 12-19, 22 and 24 above, and further in view of Takahashi (JP 6-210517), Shingijyutsu and Sakakibara (JP 06-155165); claims 11 and 23 are rejected under 35 U.S.C. § 103(a) as obvious based on a combination of Hitachi as applied to claims 1-3, 10, 12-19, 22 and 24 above, and further in view of Sakanishi (JP 63-306826); claims 25 and 26 are rejected under 35 U.S.C. § 103(a) as obvious based on a combination of Hitachi as applied to claims 1-3, 10, 12-19, 22 and 24 above, and further in view of Magara (JP 10-128620) and Kawasaki (JP 02-139125). Reconsideration and removal of these rejections are respectfully requested on the basis of the present amendment to the claims and the following remarks.

Hitachi is directed to an electric composite abrasion method. As shown in Fig. 4, an electrode 1 and a process object 3 are respectively connected to a cathode and anode of a DC power supply. The process object 3 is subject to an abrasion process by rotating the electrode at an RPM N, and applying the feeding velocity v to the process object 3, while a processing liquid 5 is supplied to the abrasive material 2 through a hollow section 4 of the electrode 1.

While the insulating abrasive material 2 of Hitachi is interposed between the electrode 1 and the process object 3 while the process object 3 is being processed, the same is quite distinct from the present independent claims 1 and 13 where a thickness of the film is controlled by changing at least one of the parameters of the contact area between the electrode and the processing subject, the pressing pressure and the relative shifting rate. On the other hand, in Hitachi a thickness of the insulating material (and processing liquid) is not controlled. Claims 1 and 13 have been clarified to highlight this feature.

Specifically, claim 1, as now amended, requires that:

... controlling a thickness of the film by changing at least one of parameters of the contact area between the electrode and the processing subject, the pressing pressure and the relative shifting rate and the viscosity of the processing medium

Similarly, claim 13, as now amended, requires that:

... a control unit which controls the contact area between the electrode and the processing subject, the pressing pressure, the relative shifting rate and the viscosity of the processing medium as parameters, and gives an instruction for changing at least one of the pressing pressure and the relative shifting rate so that a thickness of the film is controlled

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Thus, there are significant differences between the subject invention and Hitachi. Therefore, claims 1 and 13, as now amended, are not anticipated by, or obvious in view of, Hitachi.

Amended claims 1 and 13 patentably distinguish over the Hitachi reference for the reasons above. Dependent claims 2-9, 11-12, 14-21 and 23-26, due to dependency, also patentably distinguish over Hitachi for at least the reasons that their base claims 1 and 13 patentably distinguish over the cited art. The further references to Shingijyutu, Takahashi, Sakakibara, Sakanishi, Magara and Kawasaki do not teach or suggest the deficiencies in Hitachi. Therefore, for the same reasons that independent claims 1 and 13 are not anticipated by, nor obvious over, Hitachi, dependent claims 2-9, 11-12, 14-21 and 23-26, which depend from claims 1 and 13, are not obvious over the combination of Hitachi and the other cited references.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Attached hereto is a version with markings to show changes made.

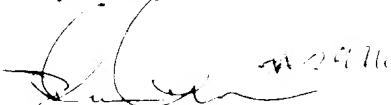
The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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Respectfully submitted,



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PATENT TRADEMARK OFFICE

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 10 and 22 are canceled.

The claims are amended as follows:

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1. (Amended) A discharge processing method, wherein an insulating processing medium having a viscosity is interposed between an electrode and a processing subject and discharging energy is supplied between the electrode and the processing subject so that the processing subject is processed by the discharge, wherein a processing is carried out with comprising the steps of:

pressing the electrode being pressed onto against the processing subject at a predetermined pressure so as to allow the processing medium to form a thin film, the electrode and the processing subject defining a contact area therebetween;

moving while at least one of the electrode and the processing subject are being relatively moved relative to each other with a relative shifting rate; and

controlling a thickness of the film by changing at least one of parameters of the contact area between the electrode and the processing subject, the pressing pressure and the relative shifting rate and the viscosity of the processing medium.

8. (Amended) The discharge processing method according to claim 1, wherein a green compact, which is formed by compressing and molding metal such as titanium that forms a hard compound such as titanium carbide (TiC) or powder thereof, is used as the electrode, and a

processing medium containing carbon is used as the processing medium.

13. (Amended) A discharge processing device, wherein an insulating processing medium having a viscosity is ~~interpolated~~interposed between an electrode and a processing subject and discharging energy is supplied between the electrode and the processing subject so that the processing subject is processed by the discharge, characterized by comprising:

a pressing unit which presses an electrode ~~onto~~against a processing subject with a predetermined pressure ~~so as to allow the processing medium to form a thin film, the electrode and the processing subject defining a contact area therebetween; and~~

a driving unit which moves the electrode and the processing subject relative to each other ~~with a relative shifting rate;~~

~~wherein a processing is carried out while the electrode is pressed onto the processing subject at a predetermined pressure so as to allow a processing medium to form a thin film with the electrode and the processing subject being relatively moved; and~~

a control unit which controls the contact area between the electrode and the processing subject, the pressing pressure, the relative shifting rate and the viscosity of the processing medium as parameters, and gives an instruction for changing at least one of the pressing pressure and the relative shifting rate so that a thickness of the film is controlled.

14. (Amended) The discharge processing device according to claim 13, wherein the thin film is formed with a thickness of 0.1 to 1 μm .

15. (Amended) The discharge processing device according to claim 13, wherein the relative movement is carried out in a spiral manner.

16. (Amended) The discharge processing device according to claim 13, wherein the processing medium is a lubricant is used as the processing medium.

17. (Amended) The discharge processing device according to claim 13, wherein the processing medium is grease is used as the processing medium.

18. (Amended) The discharge processing device according to claim 13, wherein the processing medium is a material formed by allowing a polymeric water absorber to absorb water is used as the processing medium.

19. (Amended) The discharge processing device according to claim 13, wherein the processing medium is a mixture containing silicon powder is mixed into the processing medium.

20. (Amended) The discharge processing device according to claim 13, wherein the electrode is a green compact, which is formed by compressing and molding a metal such as titanium that forms a hard compound such as titanium carbide (TiC) or a powder thereof, is used as the electrode, and the processing medium contains carbon is used as the processing medium.